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ABSTRACT

CREATE (Criterion Referenced Education Associated to Evaluation) is a management and evaluation program developed by the Migrant Division of Region 14 Education Service Center. The evaluation plan, which is the basis for the total program, is tied directly to decision-making at all levels in the program. Utilizing a goal-oriented approach, the evaluation process consists of seven distinct steps: identifying the major evaluation concerns, identifying the information levels to be served, formulating criterion-referenced objectives, identifying relevant variables, collecting and analyzing information, and reporting to decision-making personnel. CREATE is also a management system which helps teachers to zero-in on student needs without dictating how the teacher is to instruct the student. The CREATE system accurately brings about (1) a basic education program for students which will meet their specific needs, (2) an efficient plan for material distribution and purchasing, (3) an effective support system for teacher improvement, and (4) an accurate means of evaluating the total program. This paper presents a brief history of the progressive steps which were taken to develop CREATE, the major administrative/support enabling objectives incorporated into the evaluation effort, and the student performance levels to be evaluated, and brief summations of the evaluation. (NQ)

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CREATE

CRITERION

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EDUCATION

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TO

EVALUATION

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REGION 14

ABILENE, TEXAS

1975

PREFACE

The information contained in this document relates to the management and evaluation program developed by the Migrant Division of Region 14 Education Service Center. It is not our intention at this time to lead you step by step through the program which is called CREATE. Our purpose is to present a brief history which lends itself only to the progressive steps which were taken to develop the program.

As you read the document, questions may arise as to actual meaning of terminology used and how evaluative information was validated and treated. Due to the nature of this report, explanations pertaining to this information along with glossary of terms, charts, and figures were omitted for the purpose of brevity.

If other information is needed for clarification, please write to the following and express your specific need:

Region 14 Education Service Center
Migrant-Bilingual Division
P.O. Box 3258
Abilene, Texas 79604

We will answer any inquiry as quickly as possible.

CREATE

A program developed by the migrant staff of Region 14 Education Service Center for the instruction of migrant students (CREATE) Criterion Reference Education Associated to Evaluation.

The Region 14 Cooperative for Migrant Education was initiated at the midpoint of the 1969-70 school year in response to needs identified in ten local school communities within the area served by Region 14 Education Service Center. In each of these communities, all of which were located within Haskell and Knox counties, those human needs such as economic deprivation, cultural isolation, limited language skills of the dominant society, and frequently interrupted school attendance which generally serve as descriptions of the life of a migrant child were identified. A cooperative venture was initiated with ten school districts to develop, under the management and direction of the Education Service Center, a comprehensive program of instructional and ancillary services for migrant children.

During the period 1970-72, the Region 14 Cooperative for Migrant Education was expanded to include twenty-three local school districts with a combined migrant enrollment of approximately 900 children. While program services were expanded in terms of broad areas of need, a number of rather specific concerns having implications for future development began to become evident to project personnel. Of particular importance were considerations of such factors as:

1. The relatively high turnover of professional staff within project schools (exceeding 25% annually during the period 1970-72) requiring continuous emphasis upon recruitment, training, and deployment of new staff.

2. The limitation in terms of budget and staff inherent in small rural school districts which restricted development of corollary supportive services for migrant children.

3. Problems incidental to the integration of staff development programs in migrant project schools which could result in appropriate modification of other local instructional strategies.

4. The almost total reliance on a standardized achievement test by local project schools as a means to evaluate pupil progress. This problem was compounded by the utilization of a variety of instruments at irregular times by participating districts.

5. The difficulties experienced by Education Service Center supportive staff in developing and deploying instructional resources and related staff development activities which could be specifically responsive to local needs.

6. The need to place emphasis upon the sequential development of pupil skills in the areas of oral language, reading, and mathematics and to ascertain rate of progress in terms of specific pupil behavior.

7. Management considerations at the Education Service Center which required careful consideration of budget control, resource acquisition and deployment, and staff time and mission requirements.

Given the above stated considerations, the staff of the Education Service Center initiated discussions with the Division of Planning and Evaluation and the Division of Migrant Education in the Texas Education Agency. These discussions were predicated by the obviously restrictive operational handicaps previously identified and resulted in the presentation of a proposed planning and evaluation format for the Migrant Program Cooperative. The design was

to incorporate the elements of:

1. A project-wide management plan based upon the specification of process objectives for supportive elements.

2. The identification and specification of specific pupil performance objectives at levels K-3 in the areas of oral language, reading, and mathematics.

3. Development of instruments and methods for data collection.

4. The specification of pupil outcomes in terms of stated performance criteria.

5. The application of criterion-referenced tests in the areas of oral language, reading, and mathematics on a sample of the pupil population.

The management design developed involved a series of events which involved:

- Assisting project personnel in specifying exact sources of information to be collected
- Developing instruments and methods for collecting the needed information
- Specifying sampling procedures
- Specifying conditions and schedules for information to be collected
- Developing a format for the information which was collected
- Defining means of coding, organizing, storing and retrieving information
- Selecting analysis procedures to be employed
- Clarifying process and performance objectives
- Defining staff and resources requirements and plans for meeting these requirements as they relate to project evaluation

An evaluation plan which was to be the basis for the total program was then developed. This design was to be pilot tested during the

school year and evaluated on a monthly basis. The evaluation was tied directly to decision-making at all levels in the program. The evaluation process utilized consists of seven distinct steps. These are the following:

Identifying the major evaluation concerns

Identifying the information levels to be served

Formulating criterion-referenced objectives

Identifying relevant variables

Collecting information

Analyzing information

Reporting to decision-making personnel

To insure effective implementation, procedures for administering the evaluation plan are built into the design. These procedures allow for summarization of the evaluation schedule; defining staff resource requirements; and a consideration of the validity, reliability, credibility, and timelines of the information collected.

The evaluation model was developed through a sequential series of steps involving program personnel at all levels in the program. A goal-oriented (as opposed to "goal free") approach was utilized. Areas which were considered in relation to the development of the model where, philosophy, program goals and selection of specific objectives considered feasible for program evaluation. These objectives were classified into two broad categories: administrative/support enabling objectives and student performance objectives.

Each objective was carefully written to facilitate the evaluation

effort. Administrative-support objectives included the following elements.

Personnel/population
Behavior
Conditions
Documentation

Student performance objectives included the following elements:

Grade level
Content area
Competency goal
Behavioral statement
Conditions and limitations
Proficiency level
Time frames

Figure 1 presents an overview of the steps utilized in constructing the evaluation model. Once the goal analysis and statement of evaluation objectives activities has been completed (as described above), careful consideration was given to a delineation of information needs to adequately evaluate. Three aspects were considered: sources (personnel and populations); documentation and proficiency levels; and time frames.

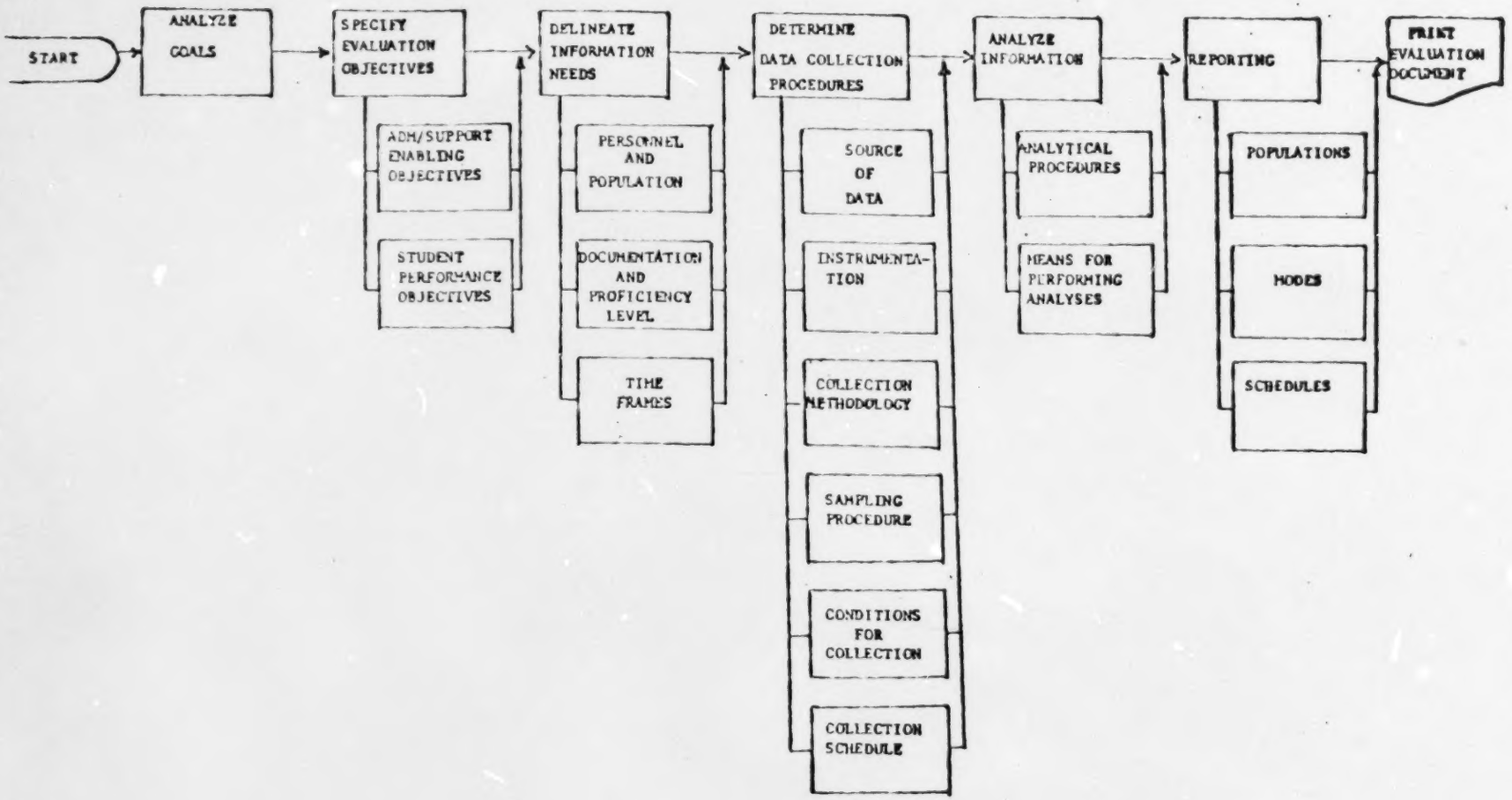

FIGURE 1: STEPS IN CONSTRUCTING THE EVALUATION DESIGN

After this general information was determined, careful consideration was given to specific data collection procedures. At this point, each data element needed was watched with the most appropriate source for securing the information; the specific instrumentation (data collection device) determined; the collection methodology specified; sampling procedures (where necessary) selected; special conditions noted; and a collection schedule established.

Data analysis and reporting were the last major steps in the developing of the evaluation model. At this point the most appropriate analysis procedures and means of performing these analysis were selected. Reporting populations were identified and reporting modes and schedules determined.

The evaluation design is arranged so that the user is able to see the elements of evaluation and their interrelations from several perspectives. The design is divided into two sections.

SECTION ONE: Administrative/Support Enabling Objectives

This section presents the major administrative/support enabling objectives incorporated into the evaluation effort. Each objective specifies who is to perform the activity; the nature of the activity; special conditions under which the activity will be performed or monitored; and how documentation is to be accomplished. Responsibility for overseeing the data collection and monitoring

activity is assigned to a member of the project staff.

SECTION TWO: Student Performance Objectives

This section specifies a series of student performance levels to be evaluated. Objectives are grouped by grade levels and subject area. Objectives are further divided according to competency goals.

Each objective contains a specific behavioral statement; associated conditions and limitations; proficiency levels; and time frames. The evaluation (monitoring) schedule is indicated and responsibility once again assigned to a staff member.

The evaluation design on a whole allows for the assessment of two levels of operations (and indirectly a third level). Figure 2 depicts the interrelationships of the design components.

OVERALL MANAGEMENT MODEL

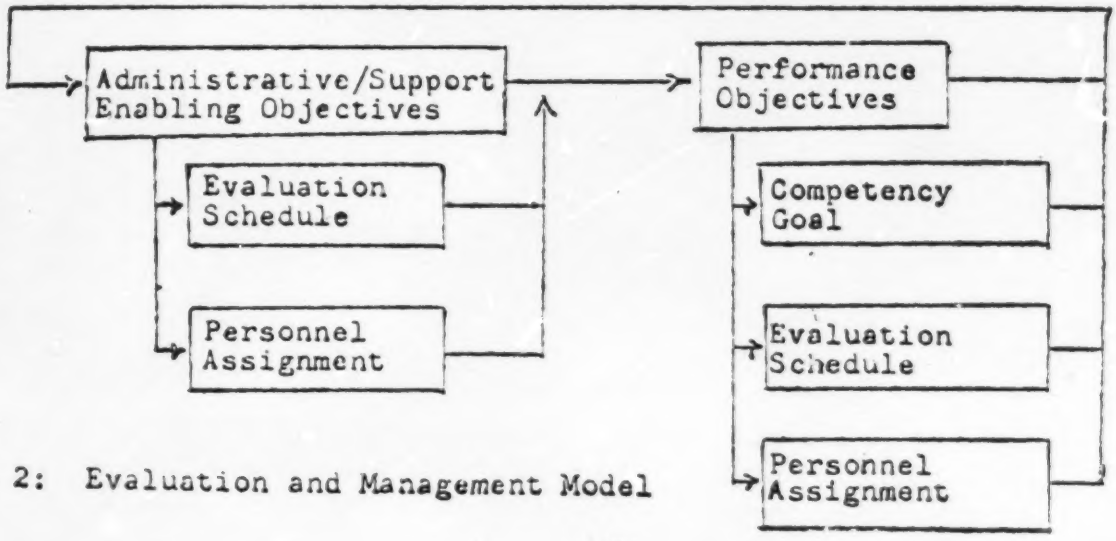

Figure 2: Evaluation and Management Model

Administrative/support enabling objectives function in direct support of the instructional program which serves as the enabling mechanism for the attainment of selected student performance objectives.

The development and assessment of program level student performance objectives constituted a major part of the 1973-74 project year evaluation effort. Each objective stated grade level; competency area; competency goal; expected behavior; conditions and limitations; proficieny level; and time frames. A carefully designed stratified random sampling plan was employed to collect information generalizable to the population. More specifically, the evaluation model utilized a proportional stratified random sampling design. The two dimensions for stratifying were grade level and school district. To facilitate the calculation of inferential statistics with a minimum of error, an attempt was made to select no fewer than twenty students at each grade level (excluding pre-K which was not included in this phase of the evaluation).

Table 1 presents the resulting proportional stratified random sampling matrix. Selection of students within cells was done using a table of random digits. A proportional male-female mix was obtained through the random selection process.

It can be noted from Table 1 that the sample proportions across grades ranged from a high of fifty-three percent to a low of

(Table 1)

DISPROPORTIONAL STRATIFIED RANDOM SAMPLE
FOR THE REGION XIV, E.S.C. MIGRANT PROGRAM COOPERATIVE

Grade Level	Anson	Aspermont	Baird	Commanche	DeLeon	Eastland	Goree	Gustine	Hamlin	Hermleigh	Knox City	Munday	O'Brien	Old Glory	Paint Creek	Rochester	Roscoe	Rotan	Rule	Stamford	Sweetwater	Trent	Weinert	TOTAL	PERCENT OF POPULATIO
K	1	1	0	1	1	0	1	0	1	1	0	0	0	1	0	1	1	1	0	1	0	0	0	12	22
1	0	1	1	1	2	0	2	1	1	1	1	1	0	0	0	1	2	1	0	2	1	0	1	20	20
2	1	0	0	1	0	0	1	1	1	1	0	1	0	0	0	0	2	1	0	1	1	0	1	13	20
3	0	1	0	1	1	0	1	0	1	1	1	0	0	0	0	1	3	1	1	1	1	0	1	16	27
4	0	1	0	1	1	0	0	1	1	1	1	1	1	1	0	0	2	1	1	1	2	0	0	17	27
5	1	1	0	1	1	0	1	0	1	1	0	1	0	0	0	1	2	1	1	1	1	0	0	15	25
6	0	0	0	0	0	0	1	0	0	2	1	0	0	0	0	1	2	0	0	1	1	0	0	9	20
TOTAL	3	5	1	6	6	0	7	3	6	8	4	4	1	2	0	5	14	6	3	8	7	0	3	102	24

thirty-one. The evaluation effort was designed to collect baseline data regarding student proficiency in the areas of mathematics and language. Analyses were performed by content area and grade level. Results were presented in this manner.

Several statistics were presented for each objective. Presented first is the proportion of students passing each objective along with criterion level (anticipated proportion) projected by teachers in the project. Since these data were obtained from samples, two inferential statistics were also presented for each objective. These are the standard error of the obtained proportion and the 95 percent interval range. These two statistics enable us to generalize to the population with a reasonable degree of accuracy. The standard error of proportion associated with each obtained proportion of students achieving the objective is an estimate of sampling error. The confidence interval provides a range wherein lies the true proportion (or percentage) of students having mastered the objectives. Both the standard error of proportion and the confidence interval statistics were, among other things, a function of sample size. Because the samples utilized in the evaluation were small (ranging between 20 and 30), these statistics were rather large. This could be seen by the broad confidence interval associated with each proportion.

As a final evaluation each objective was evaluated according to the following criteria defining achievement level:

Achieved--Established criterion level is less than lower

value in the confidence interval.

Probably achieved--Obtained proportion is at or above established criterion level, but criterion level is greater than lower point in the confidence interval.

Possibly achieved--Obtained proportion is less than established criterion level; however, upper value of confidence interval is greater than established criterion level.

Not Achieved--Established criterion level is greater than upper value in the confidence interval.

These categories were stated arbitrarily but on a sound statistical basis.

At the close of the 1973-74 project year, Education Service Center staff members and the Project Consultant Team had completed the following steps:

1. The development of a specific management plan which defined in process terms the supportive activities of the Education Service Center Migrant Component.
2. The development of basic student performance levels in the areas of oral language, reading, and mathematics at levels K-3. (See adendum page ___ for format used.)
3. Completion and analysis of a sample of criterion-referenced data in the areas of oral language, reading, and mathematics.
4. The specification of goals and priorities for continual development and refinement of the management model during the 1974-75 project year.

As a result of developments noted, the 1974-75 school year Operational Plan for the Migrant Education Cooperative did incorporate the following elements:

1. Management Component activities in terms of specific performance objectives.

2. Operationalization of instructional objectives in oral language, reading, and mathematics at levels K-3.

3. Specification and testing of learner objectives at levels 4-8.

4. Developmental activities to establish parameters for evaluation of the parent activities component.

5. The incorporation of the planning-evaluation model as the basic format for staff development activities.

During the 1974-75 school year many changes took place in the CREATE program. Due to the final evaluation results of the prior year, objectives were revised and format changed for K-3 and the areas of Math and Reading were extended to 4-8 grade levels. A transition was made from using the word grade to the word level.

For the first time in the history of the program, materials were ordered which had a direct relationship to program instruction and student performance.

Outside consultants from California, Arizona and Texas were contracted for the purpose of reviewing the CREATE program developed to this point and asked to present feedback in relation to the program structure, feasability, and classroom management. The information obtained was used to revise those areas of weakness.

Placement tests were of a priority for this period of time. It was essential that pre tests in all three areas needed to be developed

which would determine the need of each student, place him/her in the skill level for instruction relating to that need and at the same time be quick to administer. Writings of several prominent authors along with program pre test already published were reviewed by the staff for the purpose of coalating together that material and ideas which would best fit the specific needs of the program within the Region.

Teachers in-service was held with instruction aimed at how to use and report information for the CREATE program.

Program-wide student performance in the area of reading and mathematics was assessed during the 1974-75 school year on a limited basis by a project developed criterion-referenced measurement system. This system was composed of both revised items from the 1973-74 project year and new items developed during the current year. New items were developed for mathematics grades 4-6 and reading K-6. Consequently most of the items were new, since only selected items from the mathematics K-3 item series were retained into the current year.

The criterion-referenced items were developed from carefully stated objectives. Each objective clearly indicated grade level; competency area; competency goal; expected behavior; conditions and limitations; proficiency level; and time frames. A stratified random sampling plan was employed similar to that used during the 1973-74 program year to provide data generalizable to the population. Strict

proportionality was observed across school districts and grade levels except in the case where proportionality eliminated a district from being represented. In this instance, at least one student from the grade in the district having the most students was included.

Because the measurement system utilized in the 1974-75 program year represented a considerable expansion from the previous year, it was necessary to reduce the percent of students included at each grade level in the sample. This, coupled with the fact that three additional grades were added to the population under consideration, reduced the percent of the population sampled from 35% in 1973-74 to 24% in the 1974-75 school year. A stratified proportionality criterion method as described earlier was used. Selection of students within cells was done using a table of random digits. A proportional male-female mix was obtained through the random selection process.

The sample proportions across grades ranged from a high of twenty-seven percent to a low of twenty. The evaluation effort was designed to collect baseline data regarding student proficiency in the areas of mathematics and reading. Analyses were performed by content area and grade level. Results were presented in this manner.

Several statistics were again presented for each objective. Presented first is the proportion of students passing each objective along with the criterion level (anticipated proportion) specified by teachers in the project. Since these data were obtained from

samples, two inferential statistics were also presented for each objective. These statistics are the standard error of the obtained proportion and the 90 percent confidence interval range. These two statistics enable us to generalize to the population with a reasonable degree of accuracy. The same format that was used during the 1973-74 school year as previously explained was used to evaluate each objective.

Further consideration of the test data involved a comparison of obtained proportions and criterion proportions by grade level and over all grades within the mathematics and reading content areas. The treatment of the data was performed to answer the question: at what grade levels did the greatest congruency occur between criterion levels established by the teachers and performance levels obtained by students? To help answer this question, averages were computed for both expected performance (criterion levels) and actual performance (obtained proportions) resulting from student testing. In only one grade did the teachers tend to set criterion levels below what the students actually achieved. This was in the area of kindergarten mathematics. Otherwise, achievement levels tended to be below expectations established by teachers.

Overall, the widest discrepancies occurred between student performance levels and teacher expectation levels in the area of reading. This probably is due to the fact that all reading competencies and related test items were developed during the current year, hence still not fully operational. This probable cause was further sub-

stantiated by looking at discrepancies in the mathematics area. New sections of the mathematics assessment system (particularly grades 5 and 6) tended to also have relatively higher discrepancies. Thus one can conclude that teacher's expectations are generally too high and must undergo an adjustment.

Correlations between student performance and teacher-established criterion levels was charted. This analysis presented the agreement between these two variables. It was noted that student performance and teacher expectations showed varying relationships across grades. Overall, teacher expectations tended to correspond more closely with student performance in the area of mathematics. This, once again, is probably a reflection of better validated test items and more reasonable teacher expectations as a result of 1973-74 project year experiences.

In considering the evaluation effort, several conclusions were drawn. These are listed below.

1. The basic approach being utilized for student evaluation appears to be sound and highly functional.

2. The kinds of data generated have strong implications for curriculum revision and program planning.

3. The student evaluation effort is producing baseline data that will facilitate program evaluation in the years to come.

4. On a whole, the measurement systems appear sound.

5. Problems still exist in the placement of certain objectives. One indication of this is the fact that, overall, 63% of

the mathematics objectives and 70% of the reading were not achieved. Either criteria levels are too high or the placement of objectives needs to be revised. Probably the problem lies with both of the above factors.

6. The evidence indicates that this refining process does work, in that objectives which were revised (along with their corresponding assessment items) tended to demonstrate greater harmony between student performance and teacher expectation than new objectives introduced into the measurement system for the first time during the 1974-75 project year.

Refinement of the CREATE program again occurred during the summer of 1975. Revisions were made relative to the 1974-75 evaluation. Several changes which occurred were:

- Refinement of stated objectives
- Development of new format
- Development of Oral Language component
- Development of Student Record Sheet

A vital part of the instructional program in the Region 14 Migrant Education Cooperative has become the use of a project measurement system that consists of a series of criterion-referenced placement instruments and a continuous progress criterion-referenced monitoring system. This latter system is composed of criterion-referenced measurement items designed to assess progress across two hundred and fifteen (215) student learning objectives. These learning objectives are in the areas of reading and mathematics and have been

carefully sequenced across six levels in reading and seven levels in the area of mathematics. Initially students are placed using selected items from the measurement system. Student progress during the year is then monitored using the measurement system. Assessments are made by each teacher and progress noted on individual student record forms. A study of the validity of these assessments and of the measurement system was conducted during the spring of 1976. This information is reported in the document entitled A Study of the Validity of Teacher Evaluations of Students in the Region 14 Education Service Center Cooperative for Migrant Education (March 1976). This report presents information that indicates the measurement system is a valid means of assessing student progress.

The evaluation procedure and type data collected was revised for the 1975-76 school year. The summaries of student test results were given by levels for both reading and math.

Objectives at each level were given along with intial and final passing proportions and the proportion of increase. This difference between the two proportions can be interpreted as the amount of progress resulting from instruction.

In interpreting the data, several criteria were used. First the intitial passing proportion should be low if students are being effectively placed. Looking at the data this was found to be true. Secondly, since the objectives follow a sequential pattern from

easiest to most difficult, it is logical to expect that intial passing proportions for objectives within a particular level should be higher for beginning objectives and lower for objectives toward the end of the level. This expected pattern was very apparent in the data. These two observations lend further validity to the effort that was made in writing and sequencing the objectives and indirectly provide further construct validity to the measurement system itself.

The data indicated significant progress on virtually every student objective. However, wide discrepancies among objectives exist. Two questions became apparent. These were: (1) Why was significantly more progress made on certain objectives as opposed to others? and (2) What steps can be taken to help students on those objectives where the final passing proportions are relatively low? (3) Is the objective appropriately placed in the curriculum? and (4) Can the instructional methodology be made more effective?

Additional analyses were performed on the test data. One analysis contrasted relative gain within and across the reading and mathematics areas as well as within and across levels in the two areas.

First it was noted that the average increase (gain) made by students across all objectives in the reading area was virtually the same as that for mathematics. The mean proportion increases were .45 and .46 respectively. Secondly, a higher proportion of increase tended to occur in both reading and mathematics at the 0 and 2

levels while less achievement (in both areas) was noted to occur at level 1. The significance of these data was not readily apparent. Efforts should be taken to determine whether these differences are due to placement of the objective, instructional methodology, or both.

The number of weeks each student received instruction was recorded along with performance data on the criterion-referenced measurement system. This afforded a consideration of the ratio between achievement and amount (in weeks) of formal instruction received by the student. Since any instructional program will vary with respect to intensity during the school year, these ratios must be considered as gross indices. Also student attendance (or lack of attendance) was not considered. Yet across hundreds of students the indices are probably reliable.

The ratios were calculated by dividing the total number of objectives achieved by students at a particular level by the cumulative weeks of instruction afforded the same students. This resulted in an achievement/time ratio.

An examination of the student test data presented for 1975-76 school year supports the following general conclusions:

1. Very significant student progress in basic academic skills was made by students in the migrant program during the 1975-76 school year.

2. Instruction offered in the project is apparently suitable and effective.

3. The project placement tests are, in general, doing a good job in the placement process.

4. Teachers are using the measurement system as intended and in a manner that retains the validity of the system.

5. Variations in student performance among objectives at differing levels suggests that the objectives in the program should continue to be evaluated as to appropriate placement. Accompanying this effort should be a review of teaching methodology and the interaction of both objectives and methodology to determine the most appropriate blend of the two.

Teacher evaluation was also conducted at the end of the 1975-76 school year. Two separate areas were evaluated, (1) the overall migrant program, and (2) the CREATE program alone.

At this point in time and prior to the 1976-77 school year it is felt that the CREATE is a management system which helps teachers to zero-in on students needs and in no way dictates how the teacher is to instruct the student. The CREATE system accurately brings about

1. A basic education program for students which will meet their specific needs.
2. An efficient plan for material distribution and purchasing.

3. An effective support system for teacher improvement.

4. An accurate means of evaluating the total program.